AMENDMENT TO THE CLAIMS

- Please amend the claims as follows. This listing replaces any previous listings.

1. (CURRENTLY AMENDED) A solar collector comprising:

a curved glass mirror comprising a single, continuous curved surface;

a curved front sheet comprising a single, continuous curved surface, wherein the curved front sheet has the same curvature as the curved glass mirror;

a core comprising a core material selected from the group consisting of a honeycomb structure, a foam selected from the group consisting of polystyrene, polyurethane, and polyvinyl chloride, and a cellulose based material; and

a back sheet having a thermal expansion coefficient similar to that of said front sheet;

wherein a back of said mirror is affixed to said front sheet; said front sheet is affixed to said core; and said core is affixed to said back sheet.

2. (previously presented) The solar collector of claim 1 further comprising a sealing strip positioned between said glass mirror and said front sheet.

3. (original) The solar collector of claim 1 wherein said sealing strip comprises EPDM.

4. (original) The solar collector of claim 1 wherein said glass mirror comprises a silvered backing.

5. (original) The solar collector of claim 1 wherein said front sheet and back sheet comprise carbon steel.

6. (original) The solar collector of claim 5 wherein said carbon steel front sheet and carbon steel back sheet comprise a gauge between approximately 24 and 28 gauge.

7. (original) The solar collector of claim 1 wherein said core material comprises a honeycomb structure.

8. (original) The solar collector of claim 7 wherein said honeycomb core material comprises aluminum.

9. (CURRENTLY AMENDED) The solar collector of claim 8 wherein said aluminum honeycomb core material comprises aluminum foil between approximately 0.015 and ~~0.004~~ 0.002 inch foil.

10. (CURRENTLY AMENDED) The solar collector of claim 1 wherein said core material comprises ~~an expandable~~ a foam selected from the group consisting of polystyrene, polyurethane, and polyvinyl chloride.

11. (original) The solar collector of claim 1 wherein said core material comprises a cellulose based material.

12. (CURRENTLY AMENDED) A method of making a solar collector, comprising the following steps:

a) affixing a glass mirror to a front sheet to make a glass/sheet laminate, wherein the glass mirror has a single, continuous surface;

b) affixing, with adhesive, the sheet side of the laminate to a surface of a core material selected from the group consisting of a honeycomb structure, a foam selected from the group consisting of polystyrene, polyurethane, and polyvinyl chloride, and a cellulose based material;

c) affixing, with adhesive, a back sheet to an opposite surface of the core material, to make a composite panel;

d) shaping the composite panel to a specific curvature by curing, under pressure, the composite panel over a mandrel of approximately inverse curvature; and

(e) removing the composite panel from the mandrel and retaining the mirror, the front sheet, the core material, and the back sheet intact as a stacked structure.

13. (CANCELLED)

14. (CURRENTLY AMENDED) A method of making a plurality of solar collectors comprising the following steps:

a) affixing a glass mirror to a front sheet to make a glass/sheet laminate;

b) affixing the sheet side of the laminate to a surface of a core material selected from the group consisting of a honeycomb structure, a foam selected from the group consisting of polystyrene, polyurethane, and polyvinyl chloride, and a cellulose based material;

c) affixing a back sheet to an opposite surface of the core material to make a composite panel;

d) shaping the composite panel to a specific curvature by curing, under pressure, the composite panel over a mandrel of approximately inverse curvature; and

(e) removing the composite panel from the mandrel and retaining the mirror, the front sheet, the core material, and the back sheet intact as a stacked structure; and

~~The method of claim 12~~ further comprising the step of stacking a plurality of the composite panels atop each other and atop a single, one-sided mandrel to allow simultaneous construction of a plurality of solar collectors.

15. (original) The method of claim 12 further comprising the step of applying a vacuum to the composite panel in contact with the mandrel.

16. (original) The method of claim 14 further comprising the step of applying a vacuum to the composite panel in contact with the mandrel.

17-18. (CANCELLED)

19. (CURRENTLY AMENDED) The method of claim 12 wherein the front sheet and back sheet comprise 24-28 gauge carbon steel.

20. (CANCELLED)

21. (CURRENTLY AMENDED) The method of claim 12 wherein the core material comprises [[a]] an aluminum honeycomb structure.

22-23. (CANCELLED)

24. (CURRENTLY AMENDED) A method of making a plurality of solar collectors comprising the following steps:

a) affixing a glass mirror to a front sheet to make a glass/sheet laminate;

b) affixing the sheet side of the laminate to a surface of a core material selected from the group consisting of a honeycomb structure, a foam selected from the group consisting of polystyrene, polyurethane, and polyvinyl chloride, and a cellulose based material;

c) affixing a back sheet to an opposite surface of the core material to make a composite panel;

d) shaping the composite panel to a specific curvature by curing, under pressure, the composite panel over a mandrel of approximately inverse curvature; and

(e) removing the composite panel from the mandrel and retaining the mirror, the front sheet, the core material, and the back sheet intact as a stacked structure; and

~~The method of claim 12~~ further comprising the step of stacking a plurality of the composite panels above and below a single, double-sided mandrel to allow simultaneous construction of a plurality of solar collectors.

25. (CURRENTLY AMENDED) A method of making a solar collector comprising the following steps:

a) affixing a glass mirror comprising a single, continuous surface to a front sheet to make a glass/sheet laminate;

b) placing the glass/sheet laminate mirror-side down over a mandrel of specific curvature;

c) applying a coating of an expandable foam ~~selected from the group consisting of polystyrene, polyurethane, and polyvinyl chloride,~~ on the sheet-side of the laminate;

d) positioning a back sheet in a frame such that as the foam expands the foam comes in contact with a surface of the back sheet, and forces the coated laminate to adopt the inverse shape of the mandrel, thus forming a composite panel; ~~and~~

e) curing the foam; and

~~e)~~ f) removing the frame from the back sheet and the cured composite panel from the mandrel, retaining the mirror, the front sheet, the coating expandable foam, and the back sheet intact as a stacked structure.

26-28. (CANCELLED)

29. (CURRENTLY AMENDED) The method of claim 25 wherein the expandable foam is selected from the group consisting of polystyrene, polyurethane, and polyvinyl chloride foams ~~carbon steel front sheet and carbon steel back sheet comprise a gauge between approximately 24 and 28 gauge~~.

30. (NEW) A method of making a composite solar collector panel, comprising:

a) creating an assembly, comprising placing an un-cured composite panel in contact with a mandrel having a pre-determined shape;

wherein the un-cured composite panel comprises:

a glass/sheet laminate comprising a glass mirror bonded to a front sheet, wherein the glass mirror has a single, continuous surface;

a core comprising a core material;

a back sheet; and

un-cured adhesive;

wherein the glass mirror faces outwards away from the core;

wherein the core is disposed in-between the front sheet and the back sheet;

wherein un-cured adhesive is disposed in-between the front sheet and the core; and

wherein un-cured adhesive is disposed in-between the back sheet and the core;

b) enclosing the assembly in a vacuum-bag;

c) drawing a partial vacuum inside the vacuum-bag, thereby applying uniform clamping forces to the assembly, thereby forcing the un-cured composite panel to conform to the pre-determined shape of the mandrel;

d) holding the partial vacuum inside the vacuum-bag until the adhesive has cured, whereupon the mandrel's pre-determined shape is locked into the cured composite panel; and

e) removing the cured composite panel from the vacuum-bag;

thereby producing a composite solar collector panel having a curved glass mirror with a single, continuous curved shape corresponding to the inverse curvature of the mandrel's pre-determined shape.

31. (NEW) The method of claim 30, wherein the core material comprises an aluminum honeycomb structure.

32. (NEW) The method of claim 30, wherein the adhesive comprises a two-part epoxy or acrylic adhesive system with a working time of 10-90 minutes.

32. (NEW) The method of claim 30, further comprising heating the assembly during the curing step.

33. (NEW) The method of claim 31, wherein both the front and back face sheets are made of 24-28 gauge carbon steel; the glass mirror is about 1 mm thick; and the aluminum honeycomb core is about 1/4" thick with 0.002-0.003" aluminum foil and 3/8" cells.

34. (NEW) The method of claim 30, further comprising fabricating the glass/sheet laminate by:

applying a film of pressure-sensitive acrylic adhesive from a transfer roll to the glass mirror, and then removing the film's liner to expose the other side of the adhesive film;

registering and placing the front sheet onto the adhesive film; and then

applying pressure to the front sheet, thereby adhering and bonding the glass mirror to the front sheet, to make the glass/sheet laminate.

35. (NEW) A method of making a composite solar collector panel, comprising:

a) providing a glass/sheet laminate, comprising a glass mirror bonded to a front sheet, wherein the glass mirror has a single, continuous surface;

b) providing a mandrel having a pre-determined shape;

c) placing the mirror-side of the laminate in contact with the mandrel on the side having the pre-determined shape;

d) securely holding a back sheet in a frame,

e) applying a coating of an expandable foam on the sheet-side of the laminate;

f) placing the back sheet, securely held in place in the frame, in contact with the expandable foam, wherein the frame is spaced at a set distance from the mandrel;

g) expanding the foam in-between the laminate and the back sheet, thereby applying force to the laminate; thereby conforming the laminate to the pre-determined shape of the mandrel;

i) holding the frame in place until the expanding foam has cured, thereby locking the mandrel's pre-determined shape into the glass/sheet laminate; and

j) separating the cured composite panel from the frame and mandrel; wherein the cured composite panel comprises a curved glass mirror, with a single, continuous curved shape corresponding to the inverse curvature of the mandrel's pre-determined shape.

36. (NEW) The method of claim 35, wherein the core material comprises an aluminum honeycomb structure.

37. (NEW) The method of claim 35, wherein the expandable foam is selected from the group consisting of polystyrene, polyurethane, and polyvinyl chloride foams.

38. (NEW) The method of claim 35, wherein the expandable foam comprises a two-part, pour-in-place, urethane foam.

39. (NEW) The method of claim 35, wherein both the front and back face sheets are made of 24-28 gauge carbon steel; the glass mirror is about 1 mm thick; and the cured foam has a density of about 4.4 to 5.2 lbs/ft^3.

40. (NEW) The solar collector of claim 1, wherein the entire surface of the back of said mirror is affixed to said front sheet.

41. (NEW) The solar collector of claim 1, wherein the curved glass mirror has a radius of curvature in the range of 420 to 620 inches.